

Installation Guide of Telescope Drive Master Encoder-adapter for 10" LX200ACF mount

First of all, thank you very much for purchasing our product called "Telescope Drive Master" and congratulation for your decision. This system will improve the tracking accuracy of your LX200 equatorial mount dramatically independently from its original periodic error amplitude because both periodic and aperiodic errors of your mount will completely be eliminated using our real time, ultra high precision correction system, without using conventional autoguider. We guarantee that your tracking error will remain within 1" (one arc-second) range total (or $\pm 0.5''$) within 95% of your exposure time. It means your mount will have the best tracking ability among the amateur and semipro equatorial mounts all over the world (even if your dome-shutter is closed...).

To achieve this unbelievable result, before the installation of your Telescope Drive Master, you need to complete a very accurate polar alignment process of course. Please find our proposed method to do that on the companion CD ROM or among www.telescopedrivemaster.com website's documents.

TDM controlling system contains two main logical units or parts: a high precision encoder unit (encoder and its mechanical adapter) attached directly onto the RA shaft of the mount and an electronic device (a sort of "black-box" with connectors), which receives the electrical signals arriving from the encoder unit and sends control instructions to the mount's driver via its autoguider input connector. So you will need to install the mechanical elements and the electronic device as well but do not worry: both of them can be done very easily.

Please find the drawing and description of electronic connections to be set in relevant part of User's Guide because this schematic is the same for every telescope mount. In this document you will find the mount specific instructions for mechanical adapter and encoder installation only.

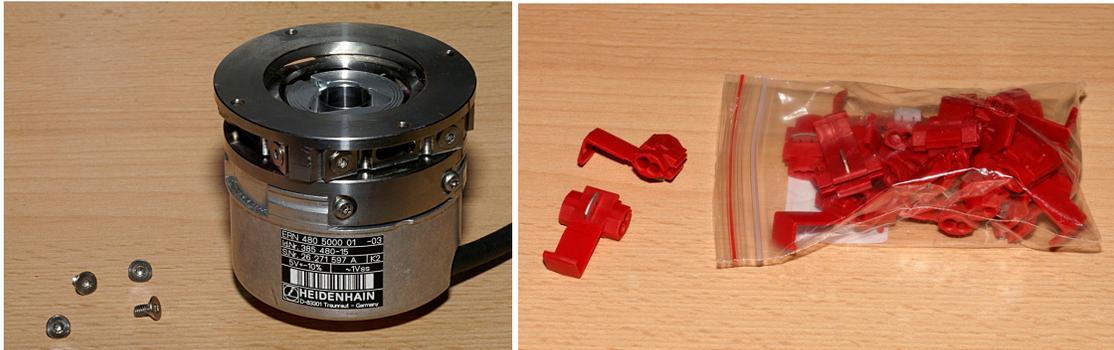
These parts of the adaptor below you need to have for installation.



Before starting it is highly important to emphasize that both encoder unit and its adapter elements are sensitive mechanical parts!!! Do not drop any of them; do not stress them during installation!!! Handle with care! Any damages of these parts can destroy product's accuracy.

Allen-wrenches (inch-scale for mount and metric-scale for coupling parts), flat pliers, a Torch screwdriver (size T8 or T9) and a 32mm spanner will be needed for installation.

You need to find the coupling mounted onto the encoder and a set of connecting piece (20pcs) as seen below.



(Installation guide for the coupling can be found on the www.telescopedrivemaster.com website.)

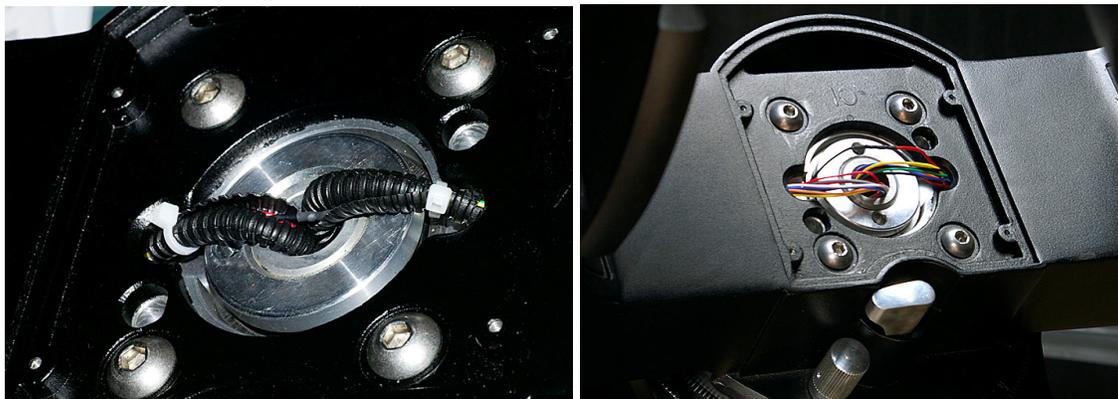
Before assembling parts during installation, please always check and clean the threads and surfaces of the RA shaft and encoder adaptor elements if necessary. Use clean clothes (not nylon!) for smooth surfaces and a dry toothbrush to clean the internal and/or external surfaces and threads of the RA hollow shaft if it is necessary. Only the clean and tight mechanical contact between surfaces will provide correct mechanical coupling and positions.

Step 1:

After fixing telescope shafts, remove flat plastic cover of the RA shaft-end from between the forks (using Allen-wrench). You will need these four screws later so please keep them.

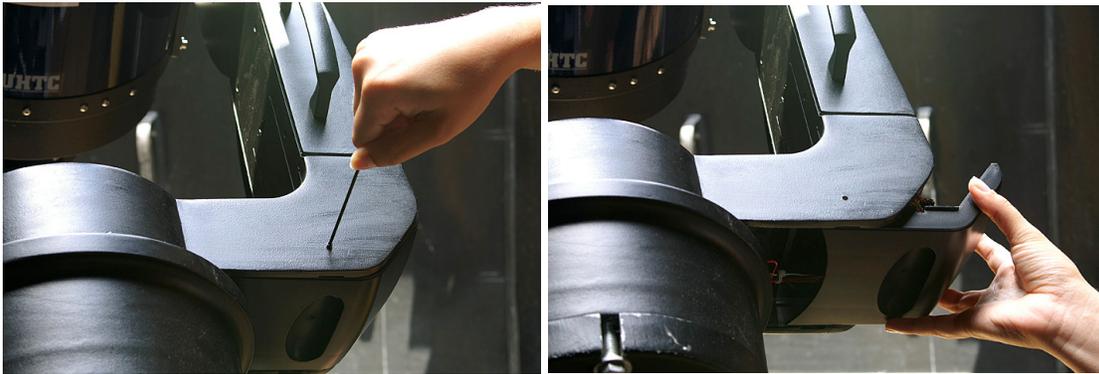
Step 2:

Please cut two cable wrappings with a sharp knife or cutting nippers carefully and remove the black plastic flexible goose necks from the cables running into the hollow shaft. Plastic goose necks are slitted so just pull them out from the wires by hand; tool does not needed.



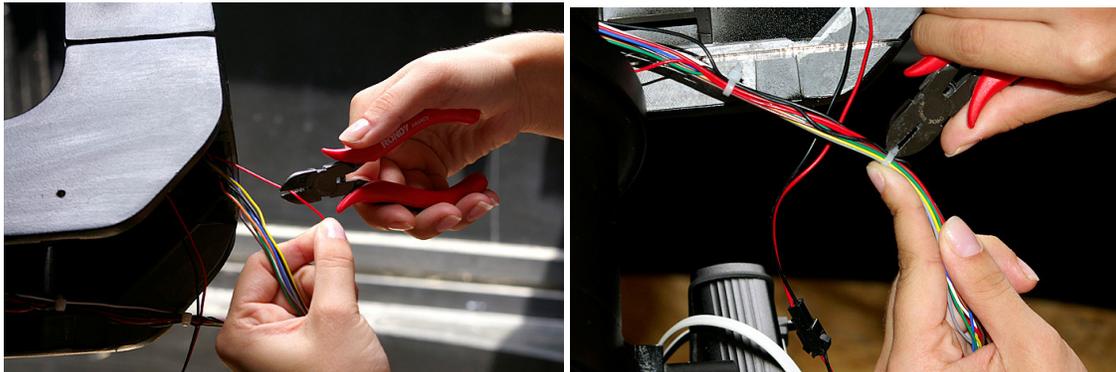
Step 3:

Now, please remove the plastic cover of the fork-elbow on both sides. To do this, you need to release the fixing screw and pull the cover out from the fork.



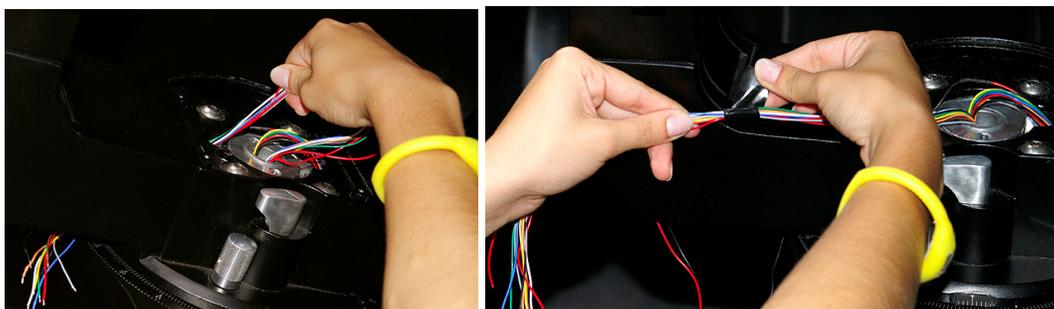
Step 4:

You have to cut the wires in both elbow coming from the RA shaft. There is just one wire (battery cable, black one in one side and red one in the other side) which does not turn down into the RA hollow shaft in the middle (see in the second picture in the step 2); this is the only one wire on both sides which you do not need to cut. Additionally, please cut the plastic bunching-nooses of the bunched cable carefully.



Step 5:

Please pull wires back from the fork and immediately bunch them in one bundle using e.g. self-adhesive insulating tape avoiding mix the wires of left and right fork arms.



Step 6:

The next step is to install the encoder onto the stator of the adaptor. At first, remove two black screws of the coupling please and, using enclosed four corrosion-free screws, fix the front part of the coupling onto the stator (left picture). Then assemble front part (with mounted stator on it) back to the encoder again but, instead of original black screws, use the rest two enclosed corrosion-free screws (right picture).

Important!!! You have to push coupling parts until full impact ("click") but do NOT press it! The compensator (middle part of the coupling) has to be able to move quite easily between the front and back parts but without any slackness or play. Please read coupling installation guide on www.telescopedrivemaster.com website.



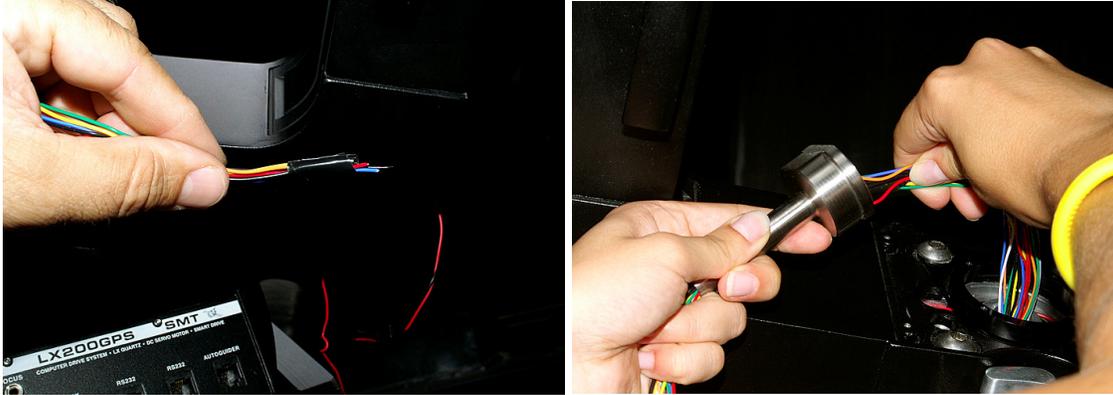
Step 7:

Please unscrew and remove the fixing ring of the RA bearing as seen below.



Step 8:

It is useful to join wires in one bundle at their ends (using the same tape as in point 5) because it is much easier to reeve the wires through the hollow shaft of the encoder. Wires of both fork-arms have to be passed through.



Step 9:

Please install encoder hollow shaft (adaptor rotor) onto the RA shaft and fix it. Be careful: do not pinch the red-black battery cable (which goes from one arm to the other directly) between the part and the RA bearing!



Step 10:

Now, remove two upper ones of the fork fixing screws.

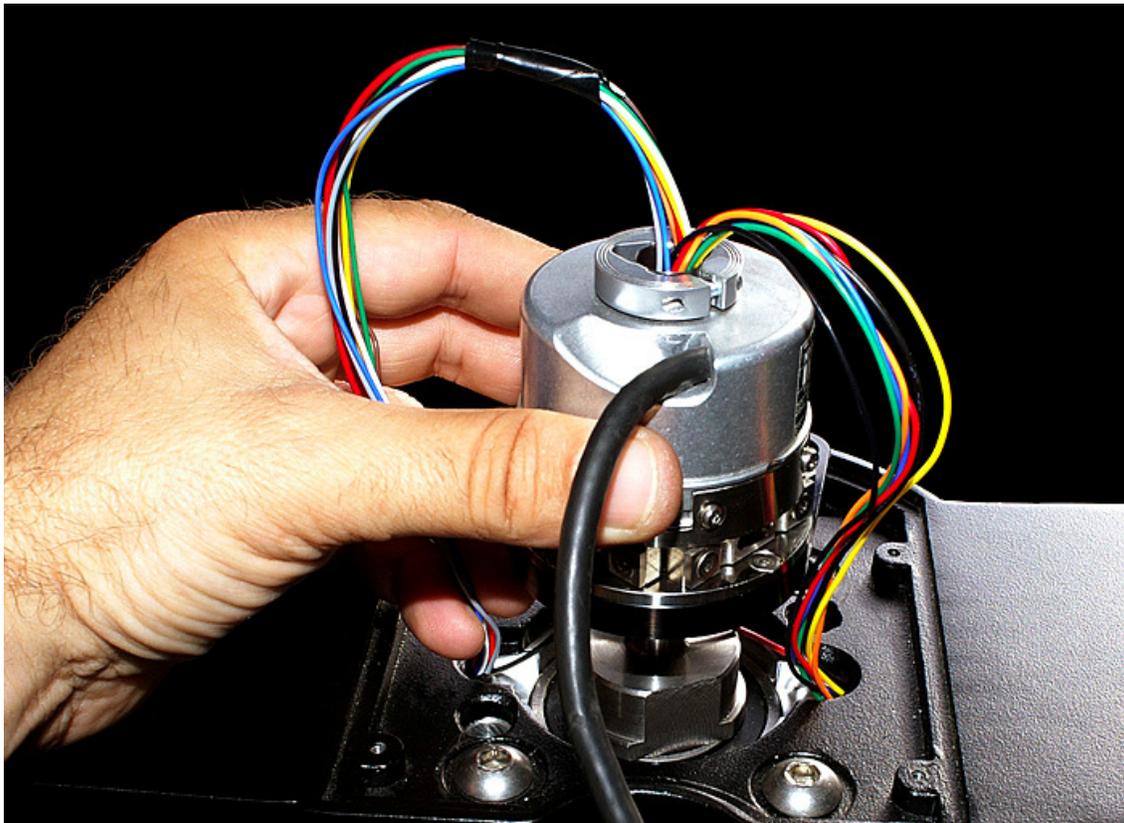
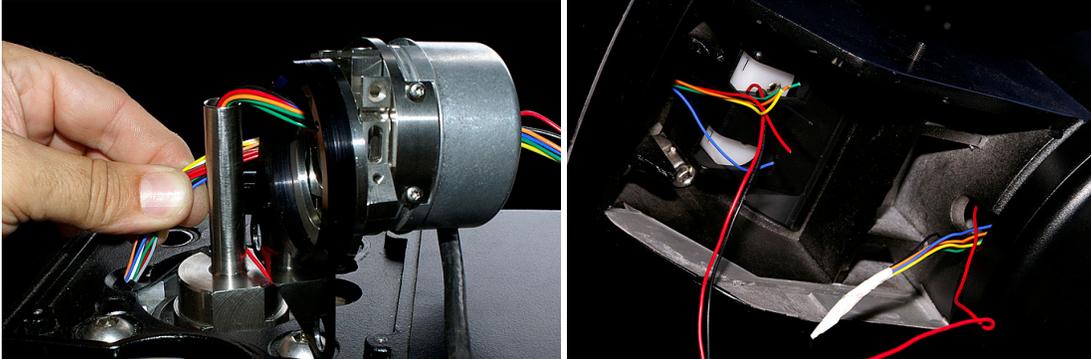


Step 11:

Please install the encoder now. Pass the wires through the encoder hollow shaft (from bottom up) and push the encoder gently onto the rotor shaft of the adaptor. You need to insert two wire-bunches back to the holes of the fork-arms. If you forget right sides of the wires (into the left arm or right arm), do not worry: the number of wires are different in the two arms.



It can be a bit more comfortable to insert the wires back into their holes if the encoder is not on its place yet. (See below.) Do not forget to join the wires together by a plastic tape if you did not do it in step 8 above.



Step 12:

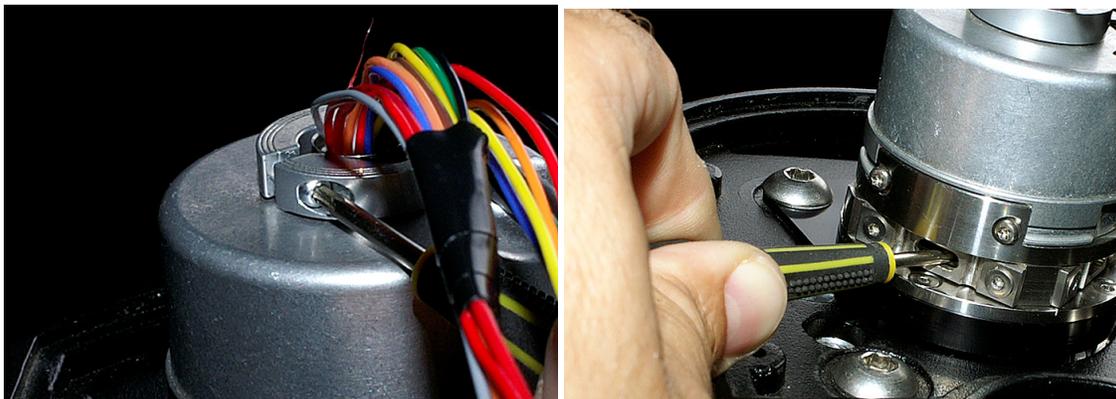
Now, put two original screws back to the fork and, using an Allen-wrench, please tighten both of them and fix the stator.



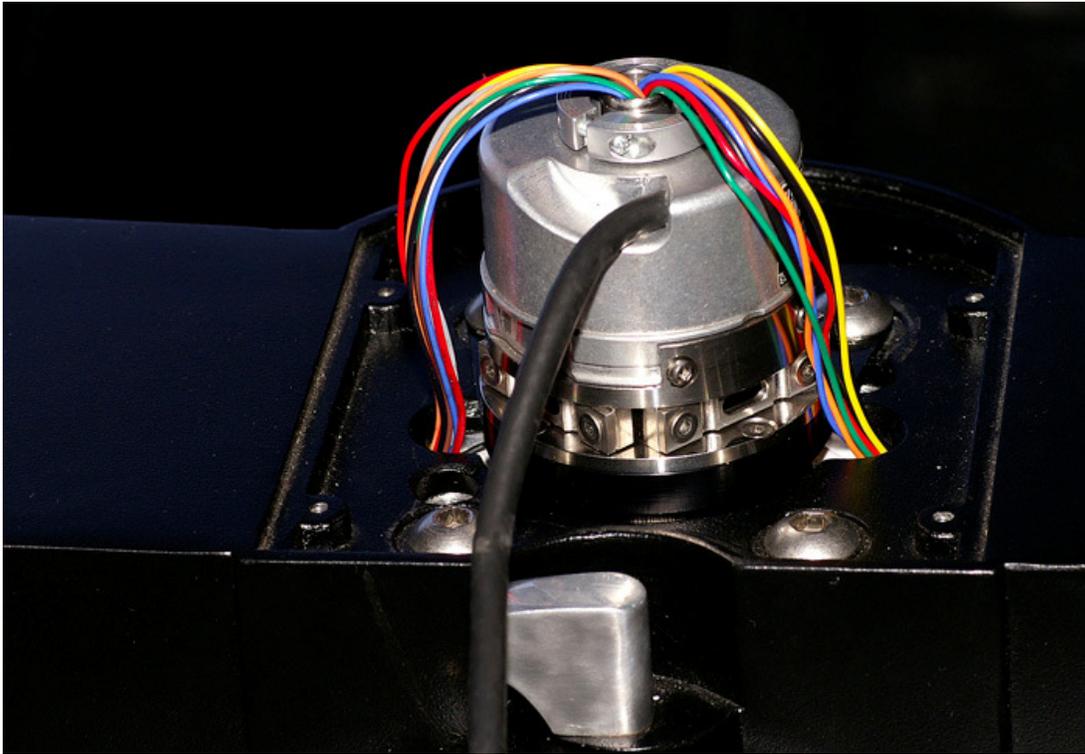
Step 13:

Tighten the screws in the clamping rings on both ends of the encoder shaft. Use Torch (T8 or T9) screwdriver to do it.

Please read coupling installation guide on www.telescopedrivemaster.com website.

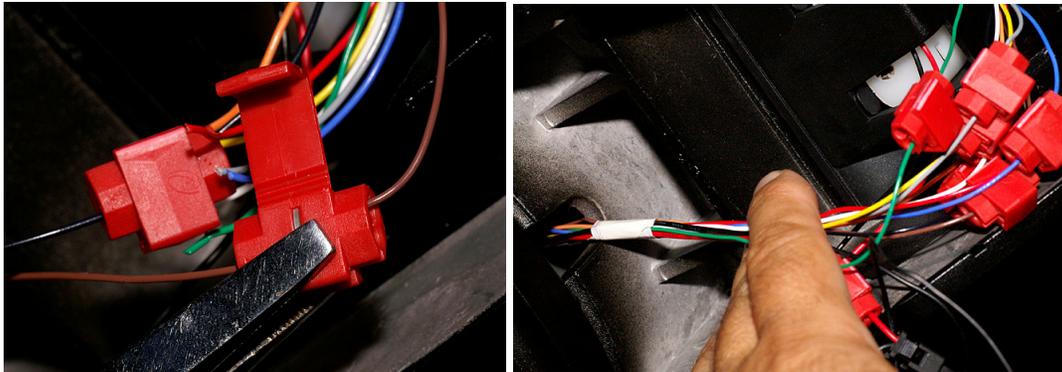


Now, the encoder has been installed.



Step 14:

The next step is to reconnect previously cut wires in the elbows of the fork. Please use red blade contact parts provided in a small plastic bag. There is only one colored wire per arm so you cannot change them. It is recommended to clamp the wires coming out from the RA platform. There is more than enough room for these blade contacts within the elbow.





Step 15:

Please put plastic covers back on both sides and fix them using original set screws.



Step 16:

The main parts of the encoder adapter have been installed. Now, please put the cover of the encoder to the place of the original plastic cover and fix it using the same screws dismantled as the very first step of this installation process.



Step 10:

Finally, please install the cap of the encoder cover for saving encoder against environmental influences.



This encoder position results cca. 10° dead zone in declination around celestial pole when you use Microfocuser (please do not forget to set it in your Autostar!!!) but you can order a pair of fork inserts from Meade Instruments Europe (as option) which lift OTA by 8cm avoiding this bottle neck during observation.



Congratulation, you successfully installed the encoder onto your equatorial mount and you have finished the most difficult part of the installation process!!!

You just need to create cable connections among telescope electric units according to the relevant part of the User's Guide.

Additionally, please find several useful tips and tricks in the User's Guide of TDM and other documents found on companion CD ROM or visiting www.telescopedrivemaster.com website.